Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1-13. (Cancelled).

14. (Currently amended) A liquid chromatography sample injection system comprising:

an arm;

~~(a)~~ a probe mounted on ~~an~~ the arm ~~of a probe drive system~~;

~~(b)~~ an injector valve mounted on the arm ~~of the probe drive system~~;

~~(c)~~ a conduit, wherein the conduit directly connects the injector valve and the probe;

~~(d)~~ a source of dilutant;

~~(e)~~ a probe pump;

~~(f)~~ a pump valve interfacing with the injector valve, the probe pump and the source of dilutant; and

~~(g)~~ a controller operably coupled to the probe pump, the injector valve, and the pump valve, wherein the controller alternates the injector valve between a loading position and an injection position and alternates the pump valve between a first position where a sample can be aspirated and dispensed through the probe and a second position where the probe can be rinsed via communication between the probe pump and the source of dilutant after the injector valve loads the sample and injects the sample.

15-20. (Cancelled).

21. (Previously presented) The liquid chromatography sample injection system of claim 14 further comprising a source of mobile phase interfacing with the injector valve.

22. (Previously presented) The liquid chromatography sample injection system of claim 21 wherein a high pressure pump supplies the mobile phase from the source of mobile phase to the injector valve.

23. (Previously presented) The liquid chromatography sample injection system of claim 40 wherein the sample analyzer comprises a liquid chromatography column.

24. (Previously Presented) The liquid chromatography sample injection system of claim 23 wherein the sample analyzer further comprises a detector.

25. (Previously Presented) The liquid chromatography sample injection system of claim 24 wherein the detector comprises an ion detector or a mass spectrometer.

26. (Previously Presented) The liquid chromatography sample injection system of claim 14 wherein the pump valve comprises a three-way valve.

27. (Currently amended) The liquid chromatography sample injection system of claim 39 wherein the arm is part of a probe drive system, the probe drive system compris[[es]]ing an X arm extending horizontally in an X direction; a Y arm slidably mounted on the X arm wherein the Y arm extends horizontally in a Y direction and slides in the X direction; and a Z arm slidably mounted on the Y arm wherein the Z arm extends vertically in a Z direction and slides in the Y direction, and further wherein the arm on which the probe is mounted is the Z arm.

28. (Cancelled)

29. (Previously Presented) The liquid chromatography sample injection system of claim 14 wherein the injector valve is located within about 6 inches of a vertical axis of the probe.

30. (Previously Presented) The liquid chromatography sample injection system of claim 14 wherein the conduit has a length of less than 12 inches.

31. (Currently amended) The liquid chromatography sample injection system of claim ~~21~~ 40 wherein the mobile phase forces the sample toward a sample analyzer when the controller alternates the injector valve into the injection position.

32. (Previously presented) The liquid chromatography sample injection system of claim 31 further comprising a motor, wherein the motor powers the alternation of the injector valve.

33. (Previously Presented) The liquid chromatography sample injection system of claim 14 wherein the injector valve is a six port injection valve.

34. (Previously Presented) The liquid chromatography sample injection system of claim 14 wherein the injector valve is a four port injector valve.

35. (Cancelled).

36. (Currently amended) The liquid chromatography sample injection system of claim 39, wherein the arm is part of a probe drive system, and further wherein the controller operates the probe drive system.

37. (Currently amended) A liquid ~~chromatography sample injection system~~ handler comprising:

(a) a probe drive system ~~of an automated liquid handler~~; wherein the probe drive system comprises an X arm extending horizontally in an X direction; a Y arm slidably mounted on the X arm to move in the direction of the X arm wherein the Y arm extends horizontally in a Y direction; and a Z arm slidably mounted on the Y arm to move in the direction of the Y arm wherein the Z arm extends vertically in a Z direction; and a probe holder slidably mounted on the Z arm to move in the direction of the Z arm;

(b) an injector valve mounted on the Z arm of the probe drive system; wherein the injector valve comprises a sample loop, a probe port, a mobile phase input port, a column output port and a probe pump port;

(c) a probe connected to the probe port and the probe holder;

(d) a sample analyzer connected to the column output port;

(e) a probe pump connected to the probe pump port;

(f) a source of pressurized mobile phase connected to the mobile phase input port;

(g) a pump valve interfacing with the injector valve;

(h) a source of dilutant interfacing with the pump valve; and

(i) a controller, wherein the controller moves the pump valve wherein the pump valve is movable between a first position where the probe pump is operable to dispense and to aspirate a sample through the probe, and a second position where the probe pump communicates with the source of dilutant for rinsing the probe after the injector valve loads the sample and injects the sample toward the sample analyzer.

38. (Previously Presented) A method of injecting a sample into a sample analyzer of a liquid chromatography sample injection system comprising:

(a) placing an injection valve into a sample loading position, wherein the injection valve is mounted on an arm of a probe drive system of an automated liquid handler;

(b) operating a pump to provide a negative pressure through a pump valve to aspirate a liquid sample through a probe mounted on the arm of the probe drive system and into the injection valve;

(c) placing the injection valve into a sample injection position;

(d) entraining the liquid sample in the injection valve by addition of a mobile phase to force the liquid sample toward a sample analyzer;

(e) placing a pump valve into a rinse position automatically using a controller after forcing the liquid sample toward the sample analyzer; and

(f) rinsing the probe by operating the pump to deliver a solvent through the pump valve and the injection valve to the probe.

39. (Currently amended) The liquid chromatography sample injection system of claim 14, further comprising ~~the~~ a probe drive system, wherein the probe drive system positions the arm.

40. (Previously presented) The liquid chromatography sample injection system of claim 14, further comprising a sample analyzer interfacing with the injector valve.

41. (Previously presented) The liquid chromatography sample injection system of claim 21, wherein the mobile phase comprises a pressurized liquid phase.